

PERMEABILITY OF CONCRETE CONTAINING LARGE AMOUNTS OF FLY ASH

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ABSTRACT

This study was carried out to evaluate the influence of addition of a Class C fly ash on concrete permeability. An air entrained reference concrete mixture without fly ash was proportioned to have a 28-day strength of 41 MPa. Concrete mixtures were also proportioned to have cement replacement with fly ash in the range of 0-70% by weight. For each concrete mixture, compressive strength, chloride permeability, air permeability, and water permeability were determined. Air and water permeability were evaluated by using the Figg method. Chloride permeability of the concrete was measured in accordance with the ASTM C 1202.

At ages up to 28-day, no-fly ash concrete attained lower air permeability compared to high-volume fly ash concretes. At 91 days, the mixture having 50% cement replacement exhibited the lowest air permeability. The same was true for water permeability also. In general, addition of fly ash caused a decrease in chloride permeability of concrete up to 50% cement replacement.